



U.S.S.N. 09/662,927

Filed: September 15, 2000

**CLEAN VERSION OF AMENDED CLAIMS**

**Clean Version of Amended Claims**

**Pursuant to 37 C.F.R. § 1.121**

1. (Once Amended). A system for monitoring and responding to the environment of an implanted device comprising:

one or more sensors configured for monitoring data relating to variables selected from the group consisting of electrical, magnetic, mechanical, fluid flow, chemical, and thermal properties in the device or its environment in a patient, and

at least one actuator configured for implementing a response to the monitored data in the device by causing a configurational change in the device.

3. (Once Amended). The system of claim 2 wherein the data storage means is configured to be placeable on the device or contiguous to the device or within or on the body of the patient.

7. (Once Amended). The system of claim 1 comprising an external input connected through loops to effectuate change in the device from the at least one actuator.

8. (Once Amended). The system of claim 1 additionally comprising monitoring means configured for positioning external to the patient.

9. (Once Amended). The system of claim 1 wherein the sensor is configured to detect changes in pH, temperature, ion concentration, or analyte concentration.



U.S.S.N. 09/662,927

Filed: September 15, 2000

**CLEAN VERSION OF AMENDED CLAIMS**

**Clean Version of Amended Claims**

**Pursuant to 37 C.F.R. § 1.121**

1. (Once Amended). A system for monitoring and responding to the environment of an implanted device comprising:

one or more sensors configured for monitoring data relating to variables selected from the group consisting of electrical, magnetic, mechanical, fluid flow, chemical, and thermal properties in the device or its environment in a patient, and

at least one actuator configured for implementing a response to the monitored data in the device by causing a configurational change in the device.

3. (Once Amended). The system of claim 2 wherein the data storage means is configured to be placeable on the device or contiguous to the device or within or on the body of the patient.

7. (Once Amended). The system of claim 1 comprising an external input connected through loops to effectuate change in the device from the at least one actuator.

8. (Once Amended). The system of claim 1 additionally comprising monitoring means configured for positioning external to the patient.

9. (Once Amended). The system of claim 1 wherein the sensor is configured to detect changes in pH, temperature, ion concentration, or analyte concentration.

**CLEAN VERSION OF AMENDED CLAIMS**

19. (Once Amended). The system of claim 1 comprising transmitting and receiving means to the one or more sensors.

22. (Once Amended). The system of claim 1 further comprising means for remotely accessing the data.

23. (Once Amended). The system of claim 1 wherein at least one sensor is connected to means for transmitting or receiving data from a computer or phone communication means.

27. (Once Amended). The system of claim 1 wherein at least one sensor is configured to measure fouling of the device or at least one sensor over time.

28. (Once Amended). The system of claim 1 wherein at least one sensor is configured to measure protein deposition or formation of a bacterial film on a biliary stent, increase in calcification of a urinary stent, and neointimal thickening of an arterial stent, resulting in an increase in thickness, mass and wall shear.

30. (Once Amended). The system of claim 1 comprising:

- (a) one or more sensors for monitoring the general environment of the implanted device;
- (b) monitoring means; and

**CLEAN VERSION OF AMENDED CLAIMS**

(c) the one or more sensors configured for communicating information to the monitoring means and to each other, and configured for communicating commands to the actuator.

31. (Once Amended). The system of claim 30 wherein the one or more sensors communicate information to a computer transmitting the information to another computer via the internet.

33. (Once Amended). An implantable device comprising:  
one or more sensors configured for monitoring at least one condition;  
at least one actuator configured for implementing a response to the monitored condition in the device by causing a configurational change in the device; and  
the one or more sensors and the at least one actuator configured for control by at least one apparatus external to the implantable device.



COPY OF PAPERS  
ORIGINALLY FILED

U.S.S.N. 09/662,927

Filed: September 15, 2000

**CLEAN VERSION OF CLAIMS AS PRESENTLY PENDING**

**CLEAN VERSION OF CLAIMS AS PRESENTLY PENDING**

1. A system for monitoring and responding to the environment of an implanted device comprising:

one or more sensors configured for monitoring data relating to variables selected from the group consisting of electrical, magnetic, mechanical, fluid flow, chemical, and thermal properties in the device or its environment in a patient, and

at least one actuator configured for implementing a response to the monitored data in the device by causing a configurational change in the device.

2. The system of claim 1 which includes a data storage means.

3. The system of claim 2 wherein the data storage means is configured to be placeable on the device or contiguous to the device or within or on the body of the patient.

4. The system of claim 1 which includes a telemetry means.

5. The system of claim 4 wherein the telemetry means is an analog or digital electronic device.

6. The system of claim 1 comprising means for communication to one of a series of nested loops of information exchange.

7. The system of claim 1 comprising an external input connected through loops to effectuate change in the device from the at least one actuator.

8. The system of claim 1 additionally comprising monitoring means configured for positioning external to the patient.

9. The system of claim 1 wherein the sensor is configured to detect changes in pH, temperature, ion concentration, or analyte concentration.

19. The system of claim 1 comprising transmitting and receiving means to the one or more sensors.

22. The system of claim 1 further comprising means for remotely accessing the data.

23. The system of claim 1 wherein at least one sensor is connected to means for transmitting or receiving data from a computer or phone communication means.

27. The system of claim 1 wherein at least one sensor is configured to measure fouling of the device or at least one sensor over time.

28. The system of claim 1 wherein at least one sensor is configured to measure protein deposition or formation of a bacterial film on a biliary stent, increase in calcification of a urinary stent, and neointimal thickening of an arterial stent, resulting in an increase in thickness, mass and wall shear.

30. The system of claim 1 comprising:

(a) one or more sensors for monitoring the general environment of the implanted device;

(b) monitoring means; and

(c) the one or more sensors configured for communicating information to the monitoring means and to each other, and configured for communicating commands to the actuator.

31. The system of claim 30 wherein the one or more sensors communicate information to a computer transmitting the information to another computer via the internet.

32. The system of claim 31 wherein the transmission over the Internet to another computer is via a posting to the world wide web.

33. An implantable device comprising:

one or more sensors configured for monitoring at least one condition;

U.S.S.N. 09/662,927

Filed: September 15, 2000

**CLEAN VERSION OF CLAIMS AS PRESENTLY PENDING**

at least one actuator configured for implementing a response to the monitored condition in the device by causing a configurational change in the device; and

the one or more sensors and the at least one actuator configured for control by at least one apparatus external to the implantable device.

ATL1 #532034 v1